

REMARKS

The office action of May 14, 2008, has been carefully considered.

It is noted that claims 1-9 are rejected under 35 U.S.C. 112, first paragraph.

Claims 1-9 are rejected under 35 U.S.C. 112, second paragraph.

Claims 1-5 and 9 are rejected under 35 U.S.C. 103(a) over the patent to Watanbe et al.

Claims 6-8 are rejected under 35 U.S.C. 103(a) over Watanbe et al. in view of the patent to Lu et al.

In view of the Examiner's rejections of the claims applicant has amended claim 3.

It is respectfully submitted that the claims now on file contain subject matter which is sufficiently described in the specification so as to enable one skilled in the art to make

and/or use the invention. Applicant submits that those skilled in the art will readily understand how to make and use the invention based on the description found in the application.

With respect to the question of operation, calculations, connectivity, structural support, and control of the method of adjusting microstructural properties of the produced metal, a person skilled in the art knows about several methods based on a microstructural model to carry out process control by adjusting material properties, which of course depend on the respective microstructure of the produced metal. One model is disclosed by WO 99/24182 as mentioned in the paragraph beginning on line 8 of page 2 of the specification of the present application. Other models respectively describing a method for process controlling by determining microstructural transformations, wherein depending on the degree of transformation suitable process control variables are derived and an online adaptation of the process model is carried out, are disclosed by DE 199 41 600 A 1 and DE 199 41 736 A 1, which are discussed in the paragraph beginning on line 13 of page 1 of the present application. These documents disclose how to carry out operation, calculations, connectivity, structural support and control of a method of adjusting microstructural properties of a produced metal sheet. With this

knowledge, one skilled in the art would have enough information from claim 1 of the present application in combination with the description and the detailed description of an example of the invention, to determine how the invention operates.

Additionally, the paragraph beginning on page 6, line 10 of the specification of the present application gives a detailed explanation of operation, calculations, connectivity, structural support, and control of a method of adjusting microstructural properties of a produced metal. The following is explained:

- what steps are comprised by the microstructure model (starting from chemical composition; taking into consideration the rolling mill program; determining the grain size in advance (by calculating)),
- what step is carried out by the method process (the actual grain size is online detected; the actual grain size value is compared with a set value; in case of a difference actuators of the rolling mill (intermediate stand cooling) are activated and driven to influence the grain size of the formed austenite),
- what connectivity exists (a correction value is supplied to the actuators),

- what structural support is provided (rolling stand of a rolling train; online measuring after the last stand; actuators for the intermediate stand cooling), and
- how the method for adjusting microstructural properties is controlled (detecting the grain size; changing the final rolling temperature (by supplying a correction value to the actuators of the intermediate stand cooling).

Therefore, a person skilled in the art could use the invention without undue experimentation.

In view of these considerations it is respectfully submitted that the rejection of claims 1-9 under 35 U.S.C. 112, first paragraph is overcome and should be withdrawn.

It is respectfully submitted that the claims now on file particularly point out and distinctly claim the subject matter which applicant regards as the invention. In response to the Examiner's comments applicant offers the following.

Claim 1:

"online": From the specification it can be taken, that "recomputation is performed" (paragraph on page 8, line 16) and that the actual detected grain size is compared with a predetermined set value (paragraph on page 6, line 10). Furthermore, it is disclosed, that the method model is "recomputed" and that the readjustment can be accomplished "online" (paragraph on page 8, line 3). This clearly indicates that calculations and controlling are carried out by using a computer, so that parts and elements and devices of i.e. a rolling mill are connected to a computer and that a computer may be part of these devices suitable for carrying out the invention. Furthermore, "online" describes the state or conditions of a device or equipment or a functional unit and has the meaning that something is functional and ready for service and/or that something is connected to a system and in operation and/or that something is under direct control of another device and/or that something is under direct control of a system with which it is associated. This also provides a clear meaning of the term "online".

"corresponding method": this is the corresponding method process which is related to the actual microstructural characteristic value.

"an effect": that is to change the process in such a way that the detected microstructural value is effected.

"nondestructively detected": this is a commonly used expression for investigating and detecting materials without destroying them. A detailed explanation can be found in the paragraph at page 5, line 6 of the specification of the present application.

Claim 4:

"carrying out online microstructural control": this means that the control of the microstructural properties is carried out with the respective devices being "online".

"course" this means to consider the cool-down characteristics of the metal wire during passing the cooling line.

Claim 5:

"a set value": this is a predetermined set value with which the actual value is compared (paragraph on page 4, line 16).

"online adaptation": the term "online adaptation" is explained in the paragraph on page 4, line 16 of the specification.

"function": this has the meaning of "depending on" or "based on" the information received in respect to the microstructure.

"the detected value": the "detected" and the "actual" value are the same value.

In view of these considerations it is respectfully submitted that the rejection of claims 1-9 under 35 U.S.C. 112, second paragraph is overcome and should be withdrawn.

It is respectfully submitted that the claims presently on file differ essentially and in an unobvious, highly advantageous manner from the methods disclosed in the references.

Turning now to the references, and particularly to the patent to Watanbe et al., it can be seen that this patent discloses a model or method of estimating the properties of a steel product. Values of previous steps are taken to calculate and determine the subsequent steps; a model is provided how to carry out several processes. But there is no indication or suggestion or hint to take an actual value, to compare this detected actual value with one value of (stored) predetermined set values and in case that this comparison reveals

a difference to carry out process controlling based on this difference by acting on installation actuators.

Watanbe et al. only teach "to automatically estimate the state of the metallic structure". There is no detection of an actual microstructural characteristic value, as in the presently claimed invention. In fact, the reference at column 10, lines 42-44, states that it is an objective to avoid testing and measuring in a finished product.

In view of these considerations it is respectfully submitted that the rejection of claims 1-5 and 9 under 35 U.S.C. 103(a) over the above-discussed reference is overcome and should be withdrawn.

Reconsideration and allowance of the present application are respectfully requested.

Any additional fees or charges required at this time in connection with this application may be charged to Patent and Trademark Office Deposit Account No. 11-1835.

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Respectfully submitted,

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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, PO Box 1450 Alexandria, VA 22313-1450, on November 14, 2008.

By:



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